What is Claimed:

1. A system for positioning a die on a substrate, the system comprising:

an alignment tool having a plurality of internal reflection surfaces, the alignment tool located below a vision plane of the substrate; and

an optical detector to receive an indirect image of a bottom surface of the die through the alignment tool,

wherein the die is positioned on the substrate based on the indirect image received by the optical detector for correct alignment of the die on the substrate.

2. The system according to claim 1, wherein optical detector is positioned above a top surface of the offset alignment tool.

3. The system according to claim 1, wherein the alignment tool comprises a plurality of cornercube offset tools, each one having a respective plurality of internal reflection surfaces.

4. The system according to claim 1, wherein the alignment tool is formed from one of fused silica, sapphire, diamond, calcium fluoride and an optical glass.

5. The system according to claim 1, wherein a vertex of the cornercube offset tool is located at a position about midway between an optical axis of the optical detector and an optical axis of the die.

6. The system according to claim 1, further comprising a die placement tool,

wherein the alignment of the die on the substrate is based on a positional offset of the die placement tool from a reference position.

7. A system for positioning a die on a substrate, the system comprising:

a plurality of cornercube offset tools each having a respective plurality of internal reflection surfaces, the plurality of cornercube offset tools located below a vision plane of the substrate; and

an optical detector to receive an indirect image of a bottom surface of the die through at least one of the plurality of cornercube offset tools,

wherein the die is positioned on the substrate based on the indirect image received by the optical detector.

8. The system according to claim 7, wherein a camera receives the indirect image of the bottom surface of the die through the cornercube offset tool.

9. The system according to claim 7, wherein a vertex of the cornercube offset tool is located at a position about midway between an optical axis of the optical detector and an optical axis of the die.

10. The system according to claim 9, wherein a focal plane of the system is positioned above the vertex of the cornercube offset tool.

11. The system according to claim 7, further comprising:

a respective plurality of first lenses disposed between the optical input means and each of the plurality of cornercube offset tools; and

a respective plurality second lenses disposed between the die and each of the plurality of cornercube offset tools.

12. The system according to claim 11, wherein the plurality of first lenses and the plurality of second lenses are located below the image plane.

13. The system according to claim 11, wherein the plurality of first lenses and the plurality of second lenses each have a unitary magnification factor.

14. The system according to claim 7, wherein each of the plurality of cornercube offset tools are formed from one of fused silica, sapphire, diamond, calcium fluoride and an optical glass.

15. The system according to claim 7, wherein each of the plurality of the cornercube offset tools has an apex angle of about 90°, a second angle of about 45° and a third angle of about 45°

16. The system according to claim 7, wherein optical detector is a camera.

17. The system according to claim 16, wherein the camera is a CCD camera.

18. The system according to claim 7, wherein the optical detector is a CMOS imager.

19. The system according to claim 7, wherein the cornercube offset tool has an index of refraction between about 1.5 and 1.7.

20. The system according to claim 7, wherein the cornercube offset tool has an index of refraction of about 1.517.

21. The system according to claim 7, wherein the system is used with light having a wavelength in the visible spectrum.

22. The system according to claim 7, wherein the system is used with light having a wavelength between about 1-3000nm.

23. The system according to claim 7, wherein the system is used with light having a wavelength between about 630-690 nm.

24. The system according to claim 7, wherein the system is used with light having a wavelength between about 1-400 nm.

25. The system according to claim 7, wherein the system is used with light having a wavelength between about 700-3000 nm.

26. The system according to claim 7, wherein the system is used with light having a wavelength of about 660 nm.

27. The system according to claim 7, further comprising:

a lens positioned in both i) a first optical axis between the optical input means and respective ones of the plurality of cornercube offset tools and ii) a second optical axis between the die and the cornercube offset tool, wherein the first and second optical axis are substantially parallel to one another.

28. A vision system for use with an optical detector for positioning a die on a substrate, the system comprising:

a plurality of cornercube offset tools each having a plurality of internal reflection surfaces, the plurality of cornercube offset tools located below a vision plane of the die;

a lens positioned in both i) a first optical axis between the vision plane and each of the plurality of cornercube offset tools and ii) a second optical axis between the optical detector and the plurality of cornercube offset tools,

wherein the optical detector receives an indirect image of a bottom surface of the die through at least one of the plurality of cornercube offset tools.

29. The cornercube offset tool according to claim 28, wherein the plurality of internal reflection surfaces are three internal reflection surfaces.

30. A vision system according to claim 28, wherein the optical detector is positioned above the image plane.

31. A vision system according to claim 28, wherein the first optical axis and the second optical axis are substantially parallel to one another.

32. The device according to claim 28, wherein the lens has a unitary magnification factor.

33. The device according to claim 28, wherein the lens is a respective plurality of first lenses positioned in the first optical axis and a respective plurality of second lenses positioned in the second optical axis.

34. The device according to claim 33, wherein the plurality of first lenses and the plurality of second lenses each have a unitary magnification factor.

35. A vision system for use with a bonding machine for placing a die on a substrate, the system comprising:

a cornercube offset tool having three internal reflection surfaces, the cornercube offset tool located below a vision plane of the bonding machine; and

an optical detector to receive an indirect image of the die through the cornercube offset tool,

wherein the die is placed on the substrate based on the indirect image received by the optical detector, for correct alignment of the die on the substrate.

36. A vision system according to claim 35, wherein at least one of the internal reflection surfaces is a total internal reflection surface.

37. A vision system according to claim 35, wherein the plurality of internal reflection surfaces are total internal reflection surfaces.

38. A vision system according to claim 35, further comprising a die placement tool,

wherein the alignment of the die on the substrate is based on a positional offset of the die placement tool from a reference position.

39. A system for positioning a die on a substrate, the system comprising:

image redirecting means disposed below a vision plane of the substrate, the image redirecting means having a plurality of internal reflection surfaces; and

detecting means to receive an indirect image of a bottom surface of the die through the image redirecting means,

wherein the die is positioned on the substrate based on the indirect image received by the detecting system, for correct alignment of die on the substrate.

40. A vision system according to claim 39, further comprising a die placement means,

wherein the alignment of the die on the substrate is based on a positional offset of the die placement means from a reference position.

41. A method for positioning a die on a substrate, the method comprising the steps of:

providing a cornercube offset tool below a vision plane of the substrate, the cornercube offset tool having three internal reflection surfaces;

viewing an indirect image of the die through the cornercube offset tool;

identifying a feature located on a bottom surface of the die based on the indirect image; and

placing the die on the substrate based on the identified feature.

42. A method for positioning a die on a substrate, the method comprising the steps of:

positioning a plurality of cornercube offset tools below a vision plane of the substrate;

positioning a first lens between each of the plurality of cornercube offset tools and the die;

positioning a second lens between each of the plurality of cornercube offset tools and an optical input device; and

viewing a surface of the die through the first lens, the cornercube offset tool, and the second lens.

43. A method for use with a bonding machine to place a die on a substrate, the method comprising the steps of:

positioning a cornercube offset tool below a vision plane of the bonding machine;

positioning a lens between i) the vision plane and the cornercube offset tool and ii) between an optical input device and the cornercube offset tool;

viewing a portion of a bottom surface of the die through the cornercube offset tool and the lens; and

placing the die on the substrate based on the viewed portion of the die.